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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,626	10/23/2003	Robert J. Small	060937-217-US	5914

7590

08/29/2006

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EXAMINER

CHEN, KIN CHAN

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 08/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/690,626	SMALL ET AL.	
	Examiner	Art Unit	
	Kin-Chan Chen	1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 July 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-12, 14, 15 and 22-28 is/are pending in the application.
- 4a) Of the above claim(s) 8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-7, 9-12, 14, 15 and 22-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-5 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda et al. (US 2003/0017785; hereinafter "Ueda") in view of Wieserman et al. (US 4,904,634).

In a method and composition for polishing, Ueda teaches that a polishing slurry may comprise a polishing accelerator [0031], a diluent, an abrasive material, and plurality of chelating particles that are insoluble in the diluent. The chelating particles may comprise a particle and a plurality of chelator compounds attached to the surface. The chelating particles have a net negative zeta potential. See [0008], [0018], [0023], [0027], [0031], [0033], [0039].

Unlike the claimed invention, Ueda does not disclose that the chelating compounds may be attached to a spacer, which is different than the chelating compounds and different than the particle. Wieserman teaches that spacer molecules may be used for holding metal oxide particles apart (col. 4, lines 4-5) when used as chelating agent (col. 4, line 35). The spacer may be a organic molecule comprising a

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monomer or oligomer. Col. 3, lines 55-60; col. 4, lines 20-21, 35-40; col. 6, lines 50-65.

Hence, it would have been obvious to one with ordinary skill in the art to use the spacer as disclosed by Wieserman in the composition of Ueda because Wieserman teaches using it for holding metal oxide particles apart.

Dependant claim 5 differs from the prior art by specifying various sizes and dimensions. Because same are merely a matter of choices of design depending on the product requirements, it would be obvious to one skilled in the art to use various dimensions and a plurality of for fabricating a semiconductor device in order to accommodate the specific product design and meet the product requirement.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 6,7, 9-12, 15, and 22-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda et al. (US 2003/0017785; hereinafter "Ueda") in view of Wieserman et al. (US 4,904,634) and Obanawa et al. (US 4,732,887).

In a method and composition for polishing, Ueda teaches that a polishing slurry may comprise a polishing accelerator [0031]; a diluent, an abrasive material, and

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plurality of chelating particles that are insoluble in the diluent. The chelating particles may comprise a particle and a plurality of chelator compounds attached to the surface. The chelating particles have a net negative zeta potential. See [0008], [0018], [0023], [0027], [0031], [0033], [0039].

Unlike the claimed invention, Ueda does not disclose that the chelating compounds may be attached to a spacer, which is different than the chelating compounds and different than the particle. Wieserman teaches that spacer molecules may be used for holding metal oxide particles apart (col. 4, lines 4-5) when used as chelating agent (col. 4, line 35). The spacer may be an organic molecule comprising a monomer or oligomer. Col. 3, lines 55-60; col. 4, lines 20-21, 35-40; col. 6, lines 50-65. Hence, it would have been obvious to one with ordinary skill in the art to use the spacer as disclosed by Wieserman in the composition of Ueda because Wieserman teaches using it for holding metal oxide particles apart.

Unlike the claimed invention, the combined Ueda and Wieserman does not teach the chelating particle may comprise a metal oxide abrasive and a plurality of chelator compounds recited in instant claims. In a method for forming composite chelating particles, Obanawa teaches that the chelating particle may comprise a metal oxide abrasive and a plurality of chelator compounds and it can advantageously be used as an adsorbent. See abstract; col. 4, lines 23-30; col. 9, lines 62-68; col. 10, lines 1-22; col. 11, lines 23-45. Hence, it would have been obvious to one with ordinary skill in the art to modify the combined Ueda and Wieserman by using the composite chelating

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particles as taught by Obanawa in order to efficiently chelate (or adsorb) the metallic residues.

As to dependent claim 2, see col. 4, lines 23-30 of Obanawa.

As to dependent claims 6-8, see col. 9, lines 62-68 and col. 10, lines 1-22 of Obanawa. Claims 6 and 15 specify that at least a portion of the functional groups is no further than about 7 angstroms from another functional group. Since the compound is used as a chelating agent, it is expected that the distance between two functional groups are adjusted so as to efficiently chelate the metallic residues depending on the product requirement, therefore, it is merely a matter of choice of design depending on the product requirement. As to dependent claims 22 and 23, since same material and composition are disclosed in the prior art, the limitation of "attached by a covalent chemical bond" would have been expected.

As to dependent claim 11 specifies that the spacer comprises at least about 10 carbon atom linkages. Because same is merely a matter of choices of design depending on the product requirements, it would be obvious to one skilled in the art to use various sizes of polymer chain (carbon atom linkages) in order to accommodate the specific chelating agent and meet the product requirement.

As to claims 10 and 24, since the prior art contains same function group of polymer as instant claims, the covalent chemical bond between the spacer and the particle would have been expected.

Dependent claim 22 differs from the combined prior art by specifying well-known features (such as chelating compound having at least three sulfonic acid groups)

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to the art of polishing and wet etching, the examiner takes official notice. It is the examiner's position that a person having ordinary skill in the art at the time of the claimed invention would have found it obvious to modify the combined prior art by adding any of same well-known features to same in order to efficiently chelate the metallic residues with a reasonable expectation of success. It is noted that applicant did not traverse the aforementioned conventionality (e.g., well-known features or common knowledge), which have been stated in the previous office action (March 6, 2006), MPEP 2144.03.

Dependant claims 25 and 28 differ from the prior art by specifying various sizes and dimensions. Because same are merely a matter of choices of design depending on the product requirements, it would be obvious to one skilled in the art to use various dimensions and a plurality of for fabricating a semiconductor device in order to accommodate the specific product design and meet the product requirement.

As to dependent claim 27, Ueda teaches that the slurry may comprise a plurality of abrasive particles, see [0028], last two lines.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kin-Chan Chen whose telephone number is (571) 272-1461. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent

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Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

August 24, 2006



Kin-Chan Chen
Primary Examiner
Art Unit 1765